

"...Alon boldly articulates the basic principles underlying biological circuitry at different levels and shows how powerful they can be in understanding the complexity of living cells. For anyone who wants to understand how a living cell works, but thought they never would, this book is essential."

— Michael B. Elowitz, California Institute of Technology, Pasadena, USA

"This is a remarkable book that introduces not only a field but a way of thinking. ... Alon's clear intuitive language and helpful examples offer — even to a mathematically naive reader — deep mathematical insights into biology. The community has been waiting for this book; it was worth the wait."

— Galit Lahav, Harvard Medical School, Boston, USA

"Uri Alon offers a highly original perspective on Systems Biology, emphasizing the function of certain simple networks that appear as ubiquitous building blocks of living matter. The quest for simplicity — without losing contact with complex reality — is the only way to uncover the principles organizing biological systems. Alon writes with uncommon lucidity..."

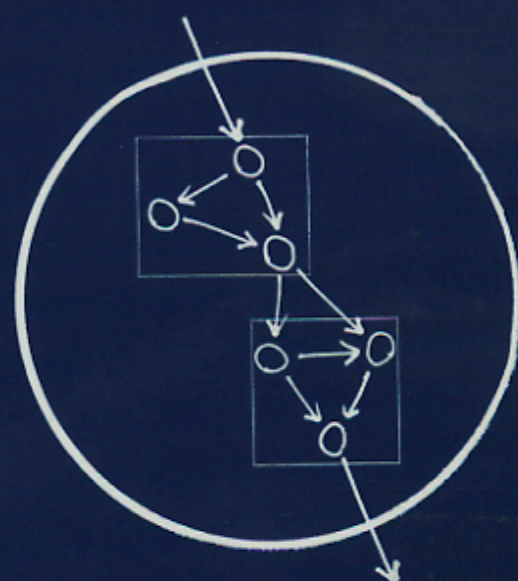
— Boris Shraiman, University of California, Santa Barbara, USA

An Introduction to Systems Biology: Design Principles of Biological Circuits

builds a foundation for the intuitive understanding of general principles in biology. It encourages the reader to ask *why* a system is designed in a particular way and then proceeds to answer with simplified models.

Features

- Explains the elementary circuits in transcription regulation, signal transduction, and developmental networks
- Examines the principle of robustness
- Details how evolutionary optimization can be used to understand optimal circuit design
- Considers how kinetic proofreading and other mechanisms can minimize errors in biological information processing
- Includes exercises, solved problems, and appendices with background material



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